PRO AMP systems

TACHO RELAY BX136

SPECIFICATIONS

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CK: - 1998/012610/23
Revision : 1
Date : 2017

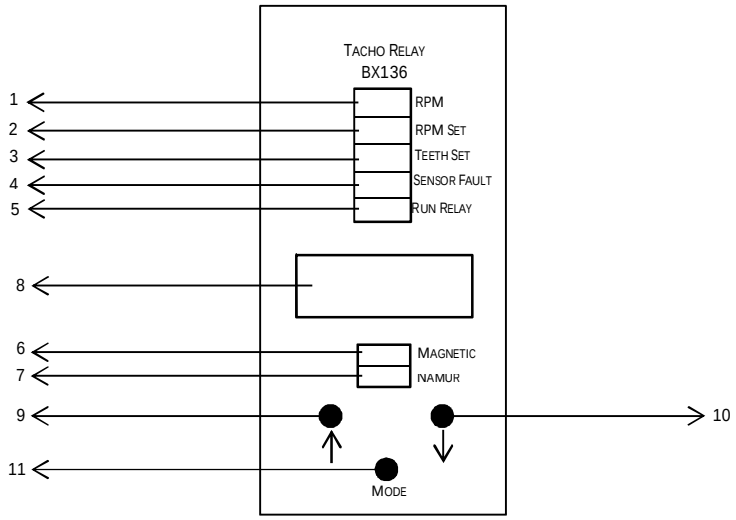
The BX136 is an extremely versatile device, designed specifically for diesel engines. The module boasts a design that can accept either a Namur sensor or a Magnetic pickup!

Features

- Magnetic Pickup or Namur sensor input.
- Multi voltage supply voltage input.
- Analogue output to drive a rev counter.
- Programmable relay switch point (SPDT)
- Wide rpm range
- LED's for function display.
- Digital rpm display
- Namur sensor cable fault detection & display
- Flywheel teeth count adjustable to suit all ring gears.

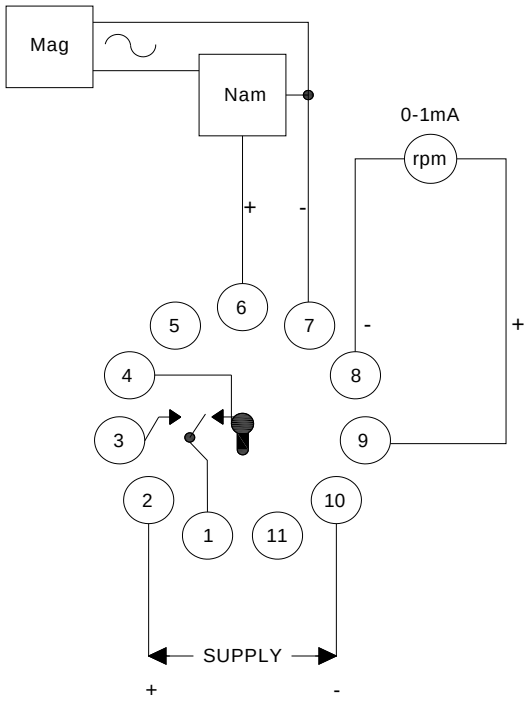
Tacho Relay General Specifications	
Supply Voltage	12 → 24VDC +/- 10%
Power Consumption	130mA at 10 → 30VDC
Operating Temperature	55°C
Operating Humidity	0 → 90% RH, non-condensing
Relay Contact Rating	(SPDT) 1A at 125VAC resistive load (SPDT) 2A at 30VDC resistive load
Reaction Delay	<1 Ms
Metering Range	100 → 3000rpm
Analogue Output	0 → 1mA
Memory Backup	Non-volatile memory EEProm
Terminals	11 Pin Plug in Module
Case Material	ABS Plastic

VISUAL INDICATORS AND BUTTONS

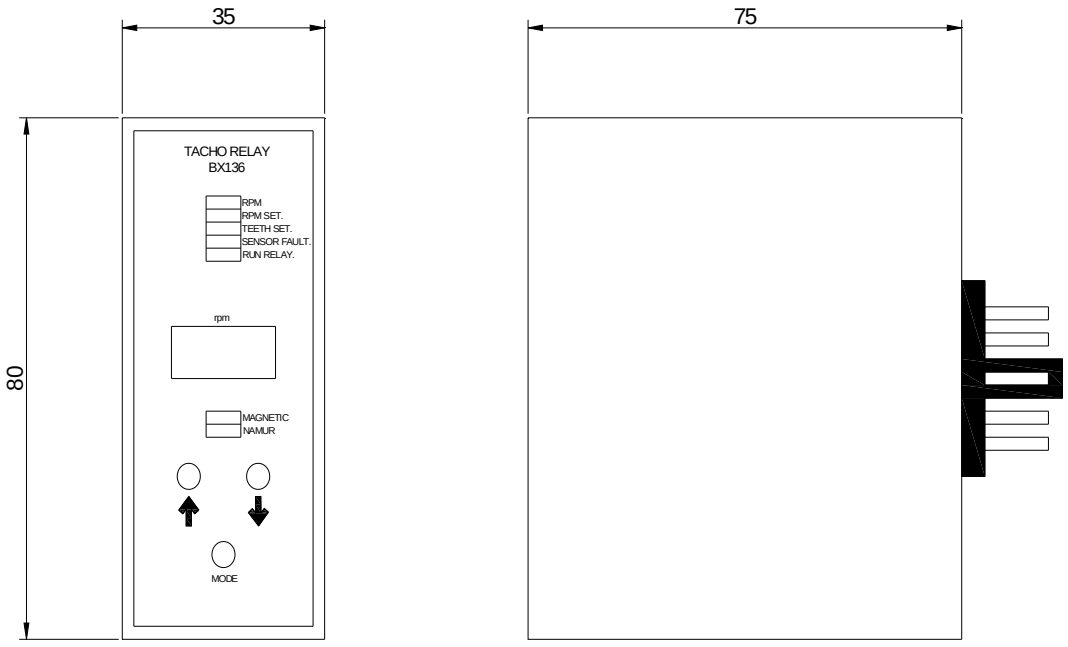


1) Green LED indicating RPM mode (Steady)
2) Yellow LED indicating RPM set mode (Flashing)
3) Red LED indicating ring gear teeth set mode (flashing)
4) Yellow LED indicating either
    a. Sensor disconnected
    b. Sensor faulty
    c. Sensor reverse polarity (Namur only)
5) Green LED indicating run relay energised (Steady)
6) Red LED (Mag) indicating the magnetic pickup is connected (Steady)
7) Green LED (Nam) indicating the Namur sensor is correctly connected.
8) 4 Digit 7 Segment displaying either of the following in real time:
    a) Engine RPM
    b) Run signal RPM
    c) Ring gear teeth quantity
        - In RPM LED (1) the unit will display the real time engine RPM
        - In RPM set LED (2) the unit will display the current run RPM set point
        - In teeth set LED (3) the unit will display the current number of teeth set
9) Up Button
10) Down Button
11) Mode Button
    - When you press and hold the mode button for 2,5 seconds the unit will enter the RPM set mode LED (2), using the up and down buttons you can now set the desired RPM in which the run relay will energise. Remember the range in which it can be set is between 100 → 3000 RPM.
    - When you press the mode button for longer than 2,5 seconds and the unit is in magnetic pickup mode, the teeth set LED (3) will be displayed, again by pressing the up and down button, the number of teeth on the ring gear can be entered. The indicator in this mode represents the actual number of teeth.
    - If you press the mode button longer than 5 seconds it will return to the RPM LED (1), or otherwise leave the button and the unit will automatically return to the RPM LED (1).
    - In Namur sensor mode LED (7) only the RPM set LED (2) will be accessible to set.
    - In magnetic pickup mode LED (6) the RPM set LED (2) and teeth set LED (3) will be accessible.
    - On power up, only when the RPM LED (1) is on, will you be able to access the mode settings, i.e. no faults LED (4) is not flashing.
    - Should you need to change the input from Namur to Magnetic pickup or vice versa the module should be powered down after the sensor has been changed.
    - The 4 digit display is off if there is no data to display

TACHO RELAY BX136 WIRING DIAGRAM



MECHANICAL DIMENSIONS



NAMUR SENSOR INPUT SPECIFICATIONS

Item Number:	IA18ESF05UC
Brand:	Carlo Gavazzi/Electromatic Control
Item Category:	Inductive Proximity
Subcategory:	General Purpose
Series:	IA
Diameter:	18 mm
Shielding:	Shielded
Power Type:	DC
Range:	5 mm
Connection Type:	Cable Connection
Length of Cables:	2m
Output Type:	Namur
Number of Wires:	2
Body Composition:	Metallic
Operating Voltage Range:	7-9 VDC
Sensing Type:	End
Status Indicator:	Yes
Rev. Polarity Protection:	Yes
Max. Leakage Current:	9.35 mA
Approvals:	UL;CE
H x W x D:	.71 in x .71 in x 2.24 in
Net Weight:	.92 oz.

MAGNETIC PICKUP INPUT SPECIFICATIONS

The output voltage of a magnetic pickup is affected by three factors.

- Voltage increases with increase of the surface speed of the monitored magnetic material.
- Voltage decreases as the air gap between the magnetic pickup and the surface of the gear tooth is increased.
- Voltage waveform is determined by size and shape of the gear tooth in relation to the size and shape of the pole piece.

As the magnetic pickup-gear relationship begins to deviate from the specifications listed above, the MPU output waveform may deteriorate to an unacceptable shape. Because the speed sensor detects zero-crossings, the waveform should cross zero only twice for each tooth (once going positive and once going negative, see Figure 1-2)

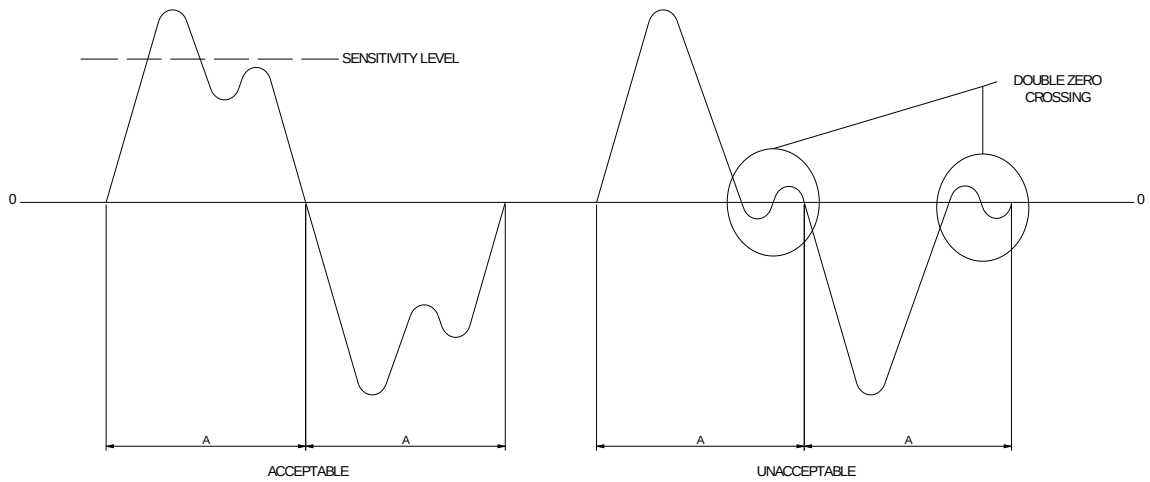


FIGURE 1 - 2. MAGNETIC PICKUP OUTPUT WAVEFORMS

MAGNETIC PICKUP

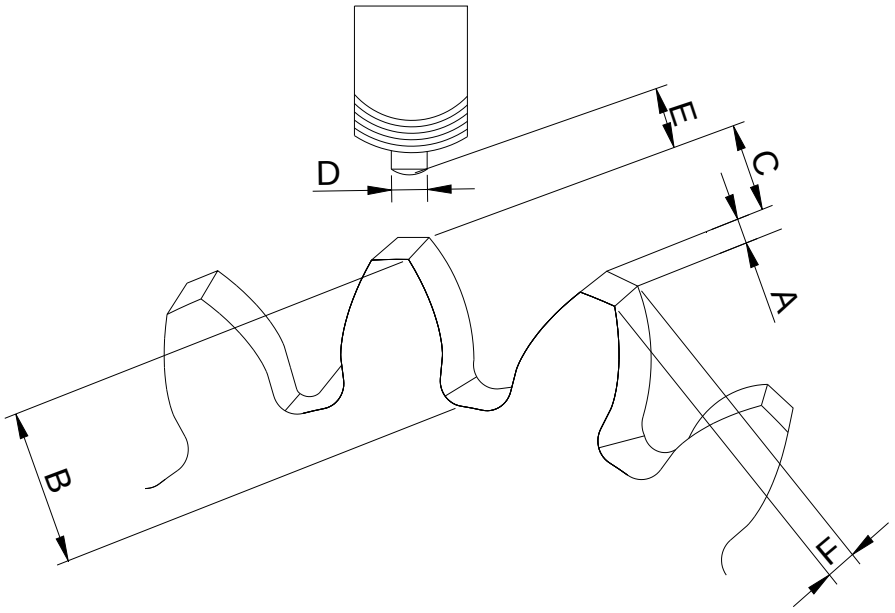


Figure 1-1. Magnetic Pickup Dimensions

In Figure 1-1, the optimum dimensions of A, B, C, and F are given as they relate to D, the diameter of the pole piece of the magnetic pickup. The optimum relationship for maximum output is as follows:

A. Equal to or greater than D.

B. Equal to or greater than C.

C. Equal to or greater than three times D.

F. Equal to or greater than D.

Electrical rating: 10V (P-P), 50mA Maximum output.

Maximum air gap: 3mm

Impedance: 140Ω +/- 2%